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(19)(CA) APPLICATION FOR CANADIAN PATENT (12).

(54) Snow Board Binding

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Canada

ABSTRACT OF THE DISCLOSURE

A snow board binding designed to facilitate "soft boot" skiing techniques, incorporating a means for form fitting of the ski boot to the binding by providing a natural hinge structure as a means of side support pieces and also comprising a highback contoured to approximate the shape of a typical ski boot ankle and calf section and a heel piece contoured to approximate the shape of a typical ski boot heel section. The ski boot is located within the confines of the binding by means of both instep and heel straps.

SNOW BOARD BINDING

This invention relates to the precision control of the handling of snow boards through the medium of the snow board bindings.

Snow boarding, as a sport, has enjoyed increasing popularity in recent years and all indications are that the trend in numbers of enthusiasts will continue unabated. In essence the sport consists of an elongate, rigid, flat board ridden downhill over a snow covered terrain by an upright rider whose feet are located in a general "T" stance on the upper surface of the board by means of dual rigid binding plates and strappings. The board is manipulated through turns and across obstacles by means of the shifting of the rider's weight which weight shifts are transmitted, via the bindings, to the board.

As with most popular sports, snow boarding has spawned various competitive events wherein individuals compete one with the other in terms of riding style, mastery of complex manoeuvers, and timing. It is during the course of such competitive events, where the equipment is subjected to extreme use, that any inherent shortcomings in the equipment are most noticeable.

With the recognition of each disadvantage comes an attempt at a solution. Not surprisingly, then, the snow board itself and its associated binding mechanisms have been the subject of much research and experimentation with the result that many variations on the basic theme have emerged. For example, much attention has been devoted to the shape and general configuration of the basic board to the point were boards now are produced in a plurality of physical shapes including, but not restricted to; wasp waisted, curved, symetrical, asymetrical, convex and concave. Likewise the construction of the board varies considerably and includes multi-layer laminates and semi-flexible constructs.

The bindings, being the sole link between the rider and the board and thus the direct means by which control over the board is achieved, have undergone dramatic and beneficial revisions in design. At the most basic level, the bindings are nothing more complex than rigid supporting plates, permanently affixed to the board and including a heel and instep strap to secure the rider's foot. Inventors have improved upon this basic structure by redesigning to include quick release mechanisms operated via complex, interconnected cabling, air pressure actuators and even hydraulic piston operated release levers.

In addition, in an effort to improve board control, various pivoting mechanisms have been introduced to enable the binding plate to track the rider's weight shifts and enhance "steerability" of the board. One problem associated with the basic binding design - and effectively addressed by the present invention - is that design's inability to accommodate the

variations in rider boot size. This becomes important in competitive activities, and to a lesser extent in common usage, where the binding plate is larger than the rider's boot size and results in lateral movement of the boot within the confines of the binding. Thus a significant degree of control is lost in "taking up" this unecessary free play. It is also desireable for control purposes to permit some flexing of the heel off perpendicular but the heel stop of most bindings by nature of their rigid attachment to the base plate make this virtually impossible.

In an effort to obviate the above mentioned disadvantages of the basic binding, inventors thereafter developed new binding designs. One such invention provides for fixed heel binding supports while allowing longitudinally adjustable toe supports. While certainly an improvement over the rigidly fixed binding design, this adjustable binding nevertheless suffers from several disadvantages of its own in that it provides for adjustable heel and toe support but ignores the requirement for side support and fails to permit flexing of the heel.

Yet another binding permits heel flexing by providing cable interconnected, pivoting heel supports but again, makes no provision for adjustment to varying boot size, provides no side support and makes no distinction between the degree of flexing of one heel as compared to the degree of flex of the other heel.

Both mechanisms described above incorporate a variety of moving parts which, in addition to contributing to overall complexity, overall board weight, increasing manufacturing costs and hence retail price, are prone to freeze up and snow clogging during snow board operation.

The present invention, then, differs significantly from the prior art of the previous two examples by providing for both longitudinal and angular adjustment and, at the same time, offering side support.

Accordingly, besides the objects and advantages of the prior art described above, several objects and advantages of the present invention are:

(a) to provide a snow board binding adjustable to accommodate varying boot sizes;

(b) to provide a snow board binding incorporating a flexible heel support;

(c) to provide a snow board binding incorporating side supports;

(d) to provide a snow board binding with no moving parts subject to freeze up and/or snow clogging;

(e) to provide a snow board binding which is relatively inexpensive to manufacture and sell; and

(g) to provide a snow board binding which is simple to use.

Further objects and advantages are to provide a snow board binding with mounting points to either side of the centre line of the board thus more equally distributing the high torque loads which can occur between the board and the binding under extreme use conditions. And which, not infrequently, results in bindings tearing loose from their board mountings.

Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

The invention, as exemplified by a preferred embodiment, is described with reference to the drawings where:

Figure 1 is a angled view with the binding straps removed.

Figure 2 is an angled view with the binding straps installed.

Although it is anticipated that the snow board binding of the present invention will be manufactured as a single unit; for descriptive purposes the various major components can be identified as a left and right side support piece 16 and 16' respectively, a heel piece 22 and a highback 10.

The highback 10 is comprised of a sheet of semi-rigid material of uniform thickness folded to a generally concave shape and formed to approximate the contours of the ankle and lower calf portion of a typical ski boot such that the highback 10 enfolds the ankle and lower calf portion of said ski boot.

The heel piece 22 is comprised of a sheet of semi-rigid material of uniform thickness and formed to a shape closely approximating the heel portion of a typical ski boot such that the heel piece 22 enfolds the heel portion of said ski boot.

The side pieces 16 and 16' respectively are comprised of dual, generally triangular members of an "L" shaped cross section consisting of a thermoplastic of a type such as to provide a natural hinge permitting flexibility and joined longitudinally by a reverse arched member of uniform wall thickness. Both dual trangular members incorporate centrally located mounting studs to accommodate heel and instep strapping. On the horizontal portion of each of said triangular members are through holes of a dimension sufficient to provide for a clearance fit to mounting studs by which the overall binding is affixed to the upper surface of the snow board.

The heel strap 12 and the instep strap 14 are of the standard ski type and well known to those skilled in the art.

The method of use of the present invention is as follows;

The rider places a ski boot clad foot within the confines of the binding as formed by the highback 10, the heel piece 22 and both side supports 16 and 16'. The side supports 16 and 16' are flexed to conform to the contours of the ski boot and affixed to the snow board by any conventional means. the straps 12 and 14 are applied across both the instep and the heel of the ski boot thus securing the rider's feet to the snow board.

Although only a single embodiment of the present invention has been described and illustrated, the present invention is not to be limited to the features of this embodiment, but includes all variations and modifications within the scope of the claims appended hereto.

The embodiments of the invention in which an exclusive property or priviledge is claimed are defined as follows:

1. A lightweight, low profile snow board binding which permits custom form fitting to accommodate various sizes of ski boots comprising:

A highback of semi-rigid material contoured to the form of the ankle and calf portion of a typical ski boot.

A heel piece slidably insertable into said highback consisting of formed semi-rigid material and contoured to the shape of the heel portion of a typical ski boot.

Dual side supports incorporating a natural hinge material permitting flexing of said side supports to accommodate various widths of ski boots and having mounting points located to the outside of said ski boot.

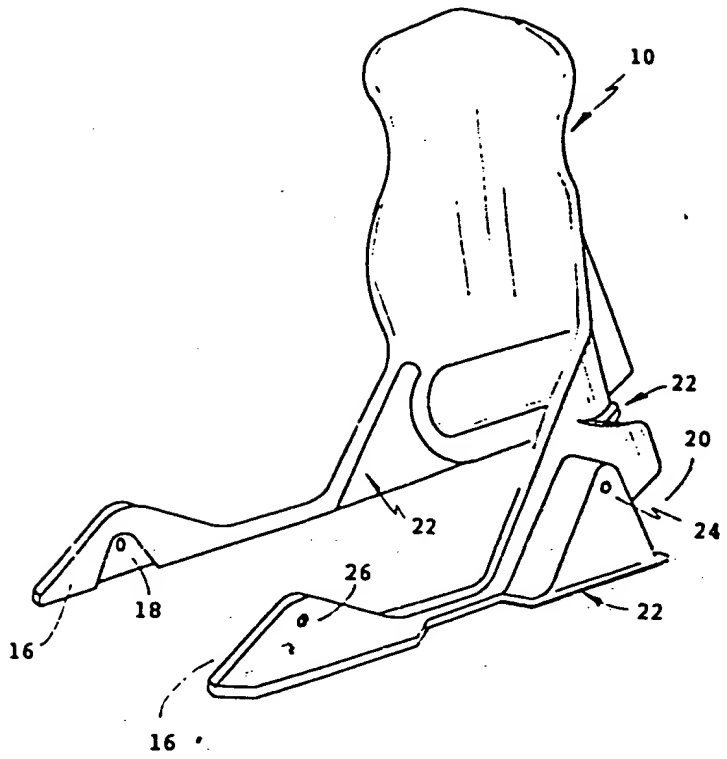

FIG 1.

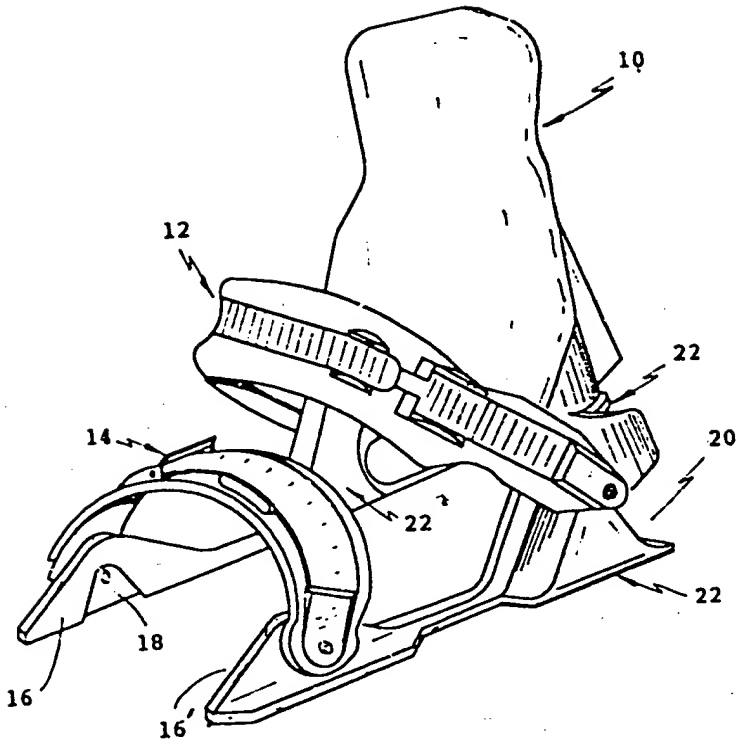

FIG 2.